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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/078,778	02/19/2002	Donald Henry Willis	PU020026	5111

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EXAMINER	
PHAM, TAMMY T	

ART UNIT	PAPER NUMBER
2675	

DATE MAILED: 10/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/078,778	WILLIS, DONALD HENRY	
	Examiner	Art Unit	
	Tammy Pham	2675	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *9/27/2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 February 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 13-16 have been added. Claims 1-16 are pending in this action.

Claim Rejections - 35 USC [1]103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okada et al. (U.S. 5,247,169) in view of Carlson (U.S. 4,523,230), and further in view of Deering et al. (U.S. Patent Publication 2003/0142099).

Regarding independent claims 1 and 9, and for claims 10-12, Okada teaches a means for dividing an input signal into a plurality of signals having at least a high brightness signal and a low brightness signal (column 2, lines 17-33).

Furthermore, Okada teaches a split low pass filter (10, 11) arrangement and a delay matching circuit (15, 16, 18) wherein the low-pass filters (10, 11) are for independently low pass filtering rising transients and falling transients in the low brightness signal to reduce adjacent pixel interdependence, and the delay matching circuit for the high brightness signal (figures 1, 2 at 10, 11, 15, 16, 18, column 7, lines 5-16, figure 3 at S7; column 3, lines 4-13;). Furthermore, Okada teaches how signals are combined for determining a positional relation between the high- and low-brightness parts by teaching an operation unit 14, comparator 21, first AND circuit 19, second AND circuit 20, third AND circuit 22, first flip-flop circuit 23, OR circuit 24, second flip-flop circuit 25, exclusive OR circuit 26, and fourth AND circuit 27 form positional relation determination means (column 5, lines 45-52, figure lb; column 6, lines 5-13).

However, Okada does not teach a means for combining the delayed high brightness signal with the filtered low brightness signal to provide an output that reduces sparkle artifacts. On the other hand, Carlson teaches this concept by teaching how low-pass filters are coupled in a cascade through a summer wherein the first of the filters is associated with a lower subspectra and the second filter is associated with a higher subspectra (column 18, lines 29-49,figure 2a; see also column 8, lines 24-62, figure 2a) such that sparkle is suppressed (column 13, lines 4650).

Thus, it would have been obvious to a person of ordinary skill in the art to combine Okada and Carlson because while Okada teaches the concept of dividing an input signal into a plurality of signals having at least a high brightness signal and a low brightness signal (column 2, lines 17-33), Carlson teaches the method of combining two signals that have been

produced via low-pass filters with the use of a summer in order to facilitate sparkle suppression (column 13, lines 46-50; column 18, lines 29-49,figure 2a; see also column 8, lines 24-62, figure 2a). The motivation for combining these inventions would have been to achieve noise reduction without the introduction of noticeable artifacts in a display image (see Abstract).

However, Okada and Carlson do not teach how their circuits would reduce pixel interdependence in a liquid crystal display. On the other hand, Deering teaches an invention relating to the field of computer graphics in a display device that may be of the liquid-crystal-on-silicon type (page 1, para. 0002; page 4, para. 0056) wherein tri-linear filtering may be used to smooth out edges involving two neighboring mip maps, and this prevents moving objects from displaying a distracting `sparkle' resulting from mismatched texture intersections (page 16, para. 0205).

Thus, it would have been obvious to a person of ordinary skill in the art to combine Okada, Carlson, and Deering because while the combination of Okada and Carlson teaches the concept of dividing an input signal into a plurality of signals having at least a high brightness signal and a low brightness signal and then combining the two signals, which have been lowpass filtered, with the use of a summer in order to facilitate sparkle suppression, Deering teaches how to reduce pixel interdependence in a liquid crystal display by the processing of smoothing out edges involving two neighboring mip maps. The motivation for combining these inventions would have been to improve the realism of images displayed on a computer system (page 16, para. 206; page 15, para. 0198).

Regarding claims 2-4, in further discussion of claim 1, Okada teaches at least two low pass filters (10, 11), at least one associated delay circuit (15, 16, 18), and a maximum selector circuit as taught by comparator (21) (figures 1A & 1B).

Regarding claim 5, in further discussion of claim 1, Deering teaches an invention relating to the field of computer graphics in a display device that may be of the liquidcrystal-on-silicon type (page 1, para. 0002; page 4, para. 0056).

Regarding claims 6-8, in further discussion of claim 3, Carlson teaches how a low pass filter circuit comprises an asymmetric 5-tap filter with coefficients (8/16), (4/16), (2/16), (1/16), and (1/16) preceded by a delay of 4 sample periods (see figures 4 & 4a).

As for claim 13, Okada teaches of a circuit for reducing adjacent pixel interdependence in a liquid crystal display, comprising: a decomposer comprising an input for receiving a signal comprising respective samples of brightness values; at least a .high brightness output providing consecutive high brightness value samples and a low brightness output providing consecutive low brightness value samples in column 2, lines 17-33 as discussed above.

Okada goes on to teach of a filter coupled to the low brightness output; the filter adjusting transition times in column 7, lines 5-16 as discussed above.

What Okada does not teach is of a decomposer receiving pixel values.

Deering teaches of working with low and high pixel values in section [0056].

It would have been obvious to one with ordinary skill in the art at the time the invention was made to combine using pixels values of Deering with the decomposer of Okada in order to improve the quality and realism of images displayed (see Deering: section [0056].

As for claim 14, Okada teaches of a circuit of claim 1 further comprising a combiner coupled to the filter and to the high brightness output for combining the high brightness samples with filtered low-brightness samples in column 7, lines 5-16 and as discussed above.

Okada does not teach of pixels.

Deering teaches of using the method to provide a filtered video signal having reduced adjacent pixel interdependence in section [0229].

It would have been obvious to one with ordinary skill in the art at the time the invention wad made utilize pixel information as taught by Deering with the coupled filters of Okada in order to improve the quality of image displayed (see Deering: section [0056]).

As for claim 15, Okada teaches of a decomposing the video signal to provide a first video signal portion comprising consecutive high brightness value samples and a second video signal portion comprising consecutive low brightness value samples in column 2, lines 17-33 and as discussed above.

Okada does not teach of using pixel values.

Deering teaches of using the consecutive low pixel value samples defining pulses in section [0056].

It would have been obvious to one with ordinary skill in the art at the time the invention was made to use pixels values as taught by Deering with the decomposition means of Okada in order to improve image quality (see Deering: section [0056]).

As for claim 16, Okada teaches of a method of claim 15 further comprising steps of filtering a signal in column 7, lines 5-16.

Okada does not teach of combing two signals.

Carlson teaches of combining two signals in column 8, lines 54-55.

Neither Okada nor Carlson teaches of pixel interdependence.

Deering teaches of adjacent pixel interdependence in section [0029].

It would have been obvious to one with ordinary skill in the art at the time invention was made to combine the filtering process of Okada with the combination process of Carlson and the pixel interdependence of Deering in order to improve the image quality (see Deering: section [0056].

Response to Arguments

Applicant's arguments filed 9/27/2004 have been fully considered, but the arguments regarding claims 1-16 are not persuasive.

Regarding the allegation that Okada fails to teach a dividing signal because Okada teaches a dividing light, according to Encarta Dictionary, the term signal can be interpretated as a form of electromagnetic wave which includes light and there dividing light can be regarding as dividing a signal.

Regarding the allegation that Okada fails to teach applicant's claimed "low pass filter," please see Deering.

Regarding the allegation that Okada fails to teach of filtering "transient" and "rising transients" and "falling transients" as defined by the applicant's specification. However, Okada does teaches filtering as expressed by the claim limitations.

Regarding the allegation that Okada fails to teach filtering a low brightness signal, please look to Carlton column 4, lines 62-67 that expresses the concept of filtering out frequency which is time based.

Regarding the allegation that Carlson does not teach of a low brightness signal, see column 8.

Regarding the allegation that Carlson does to teach of reducing sparkle artifacts, please see column 13, lines 46-56 that teaches that the apparatus suppresses, hence reduces sparkles.

Regarding the allegation that Deering does to teach of reducing pixel interdependence, please see section [0229].

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tammy Pham whose telephone number is (571) 272-7773. The examiner can normally be reached on 8:00-5:30 (Mon-Fri).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TP

Tammy Pham
October 5, 2005

CHANH NGUYEN
PRIMARY EXAMINER